

# ***DESIGN AND ANALYSIS OF ARDUINO-BASED LCR MEASURING INSTRUMENT***

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## ***Abstract***

*In the learning process of electronics practicum, in the D3 study program in Electronic Electrical Engineering in Bengkalis State Polytechnic, many components of resistors, inductors and capacitors are used. These components are passive electronic components which when electrified can only change the amount of current in the circuit but do not change the function of the circuit. The resistor functions to inhibit and regulate the electric current in an electronic circuit with the resistance unit is ohms ( $\Omega$ ), capacitors can store electrical charges in time while the capacitance unit is farad, the inductor consists of an arrangement of winding wires that form a coil. The inductor will cause a magnetic field when electrified. The inductance unit at the inductor is henry (H). Practicum laboratory in Bengkalis State Polytechnic electronics building, has various measuring instruments, such as: Multimeter, Watt Meter, and Cos Phi Meter. However, there are no measuring devices that can measure the value of inductance. Even though it is really needed a tool that is able to measure values that are close to the original value at the time of practicum, especially the value of inductance. The percentage of measuring error designed to build for resistance sensors has an effective measuring distance of 27.5 - 4630 ohms with an accuracy of 5.57%, for capacitance sensors having an effective measuring distance of 0.059 - 2200  $\mu\text{F}$  with an accuracy of 7.87%, and for inductance sensor has an effective measuring distance above 0.35 mH with an accuracy of 5.14%.*

*Keywords: LCR Meter, Resistor, Capacitor, Inductor, Passive component*